

CENTRAL INTELLIGENCE AGENCY  
**INFORMATION REPORT**

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COUNTRY	USSR (RSFSR)	REPORT	
SUBJECT	Development of the Electronic Components Krug and Typhoon	DATE DISTR.	23 February 1955
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This is UNEVALUATED Information

THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.  
 THE APPRAISAL OF CONTENT IS TENTATIVE.  
 (FOR KEY SEE REVERSE)

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2. On page 2, line 7, Mafind is mentioned; this is probably an error and should read Marfino.
3. On page 2, paragraph 3, Emil-Janowitsch probably should read Yemil-Yanovich, and the German PW mentioned in the same paragraph is Orschewsky.

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ington distribution indicated by "X"; Field distribution by "#".

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on the "seven-a-time" system, but they could not do better than an accuracy of  $\pm 5^\circ$  even with a long signal. Concomitant with the development of the electronic switch a new two-channel receiver was developed to aid in greater accuracy. With this receiver and the electronic switch they achieved an accuracy of  $\pm 2^\circ$  on an instantaneous signal. With a signal of 30 seconds duration they managed  $\pm 0.5^\circ$ . In late 1951, or early 1952

Col. ZHELEZOV, who was a somewhat jovial character when not suffering from a hangover, told that KRUG had been exhaustively tested by the Air Force and was going into quantity production. dimensions of aerial masts and reflectors as given in

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### 3. KRUG Development Personnel

In addition the following were working on KRUG the KHASIN laboratory:-

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YEMIL-YANOVICH

Major fnu Emil-JANOWITSCH, an MGB Officer.

Fnu MAYKOWSKY, a Soviet prisoner.

Fnu ORSCHENSKY, a German PW who left for an unknown destination ORSCHEWSKY in early 1951.

### 4. TYPHOON (See Annex 'A' for Block Diagram)

(i)

the frequency of TYPHOON was actually 5/20 mc/s. The portable containers mentioned

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were only provided for convenience in carrying out field tests. A mock-up of a permanent Station was built in the laboratory with an aerial on the roof. This aerial was a basket dipole which would only work over the band 12/13 mc/s. Basket dipoles were also used for field tests.

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Concerned with the problem of developing adequate aerials for both ground and air equipment was fnu FEDOROW, a Soviet prisoner, later freed, who continued his work at KUCHINO and collaborated closely with the Soviet Academy of Sciences. FEDOROW experimented with aircraft aerials stretched between tail and wing tip, and with trailing aerials. he probably had success in eventually developing adequate broad band aerials, as it is unlikely that he would otherwise have been given the status of a 'free' Engineer.

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#### (ii) Field Test Set

Annex 'A' gives the block diagram of the portable transmitter which was tested in various locations 40/60 kms from KUCHINO, in conjunction with the permanent mock-up. no details of the receiver. The operation of the transmitter is as follows:-

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A quartz generator 6/20 mc/s with a 6 SJ7; modulator stage with IS.50 feeding an output stage with 2 IS.50's in push pull.

Band changing is in three stages by plug in coils. The pulse section has a 6 SA7 gate feeding a 6 SJ7 amplifier leading on to the synchronised RC generator. The fourth stage, a 6 SN7 feeds the range scope, provides the keying pulse of 200 micro seconds for the transmitter, and the gating pulse.

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#### • (iii) Permanent Ground Station

The ground mock-up at KUCHINO had substantially the same circuitry as the field equipment, but used valves of Soviet manufacture. the output valve of the transmitter was a water cooled type capable of putting 1 KW into the aerial (C.W.)

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SECRET4. General

[redacted] KRUG and TYPHOON were developed in the same laboratory.

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[redacted] On the question of comparing frequencies, TYPHOON worked over 5-20 mc/s. (a frequency span not realised in practice)

[redacted] although the aim for KRUG was 2-20 mc/s they were instructed that it must certainly go down at least as far as 5 mc/s. After considerable reflection and discussion,

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[redacted] KRUG and TYPHOON most probably formed the component parts of a very long range of D/F and distance measuring system. Various factors in support of this belief appear in the following paragraphs.

2. KRUG

[redacted] laboratory for development of miniature equipment under Lt. Col. KOVALOW. At that time the Komet two-way radio development was completed, and a new project was brought in on which no Germans were allowed to work. [redacted] the Third Radio Technical laboratory under Lt. Col. KHASIN, who, incidentally, is described [redacted] as being an Air Force Officer. This was a straight exchange, [redacted] replacing a Soviet prisoner, from KOVALENKO, who took [redacted] place under KOVALOW. [redacted] continue development of an electronic aerial switching system which had been started by KOVALENKO. It was explained [redacted] by KHASIN that the mechanical switch was too slow in operation. Before the electronic switch was developed, KRUG had been working

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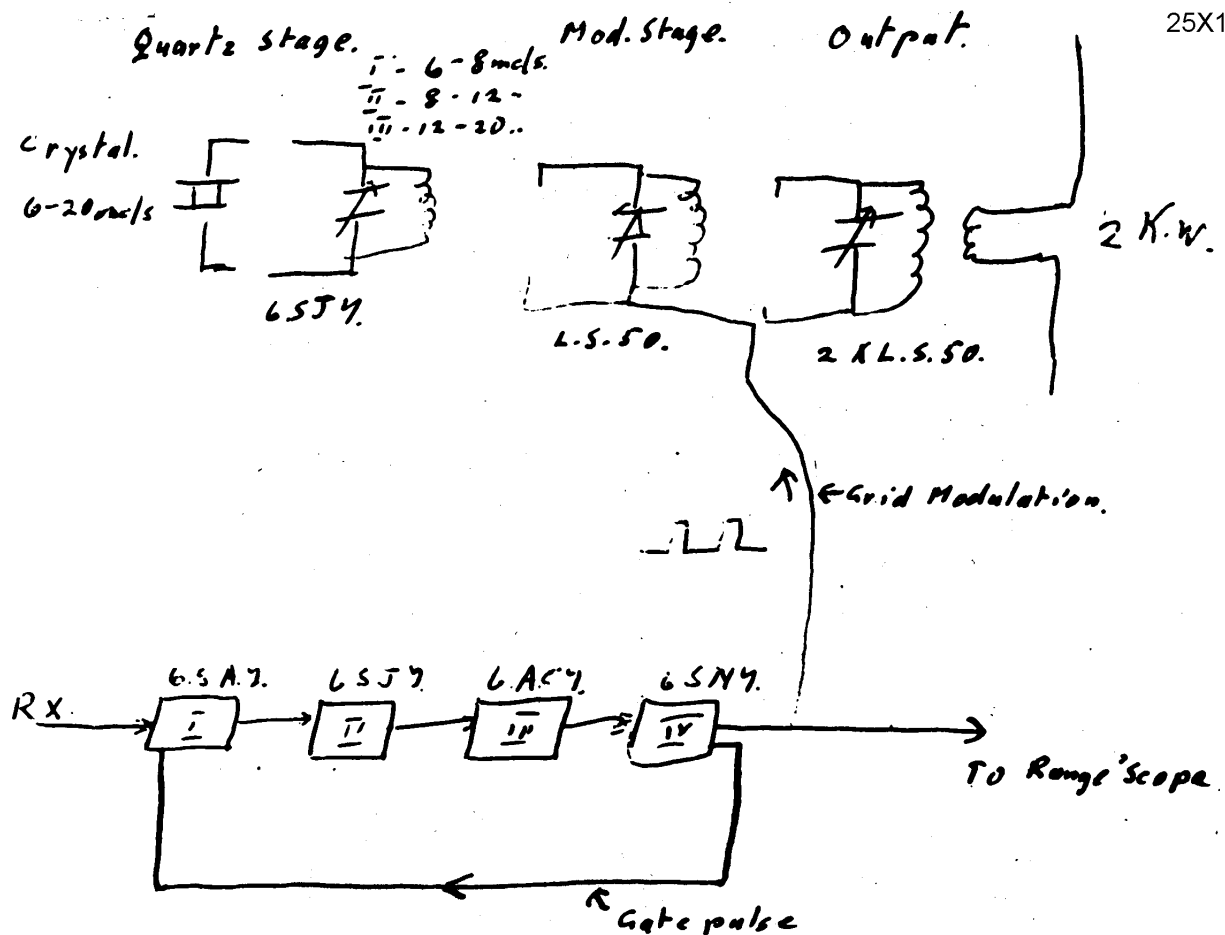
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**SECRET**Annex. APulse Section

- I - Gate stage.
- II - Amplifier.
- III - R-C. Generator. 20/40 c.s.
- IV - Range pulse, delayed mod. pulse, gate pulse.

Block schematic of Typhoon - TX and Pulse sections.

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They were able to run it at 5 Kw pulse without the water cooling switched on. It was intended to put the output of the permanent ground station up to 10 Kw subsequently.

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(iv) Progress

In general [REDACTED] TYPHOON had reached a late stage of development in January, 1951. Unsolved, so far as they know, was the problem of wide band aeriels for ground and air, but the change in FEDOROV's status leads to the belief that this had probably been solved.

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